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| 10/034,438 | 12/27/2001 | John D. Maxfield | 5253-05201 | 1506 |

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| EXAMINER | |
|---|---|
| BLACK, LINH | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2163 | |

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/034,438 | MAXFIELD, JOHN D. | |
| | Examiner | Art Unit | |
| | LINH BLACK | 2163 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *04 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *18-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

This communication is in response to the document dated 10/4/05. Claims 18-42 are pending in the application. Claims 18, 35, 39 are independent claims.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 18-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iyer et al. (US 6411964), and further in view of Pereira (US 6584474).

Iyer et al. teach the independent claims 18, 28 by the following:

identifying a first range of key values associated with a first set of rows in a database file – fig. 4, elements 400-404: clustering index; col. 4, lines 5-31; col. 6, lines 6-63; col. 12, lines 8-24.

assigning first values to each of a plurality of free space management parameters associated with the first range of key values – col. 6, lines 6-63; col. 7, lines 11-36; fig. 11, element 1126; col. 17, lines 49-60.

identifying a second range of key values associated with a second set of rows in the database file; assigning second values to each of a plurality of free space management parameters associated with the second range of key values – col. 6, lines 7-62, especially lines 37-44; col. 7, lines 11-36; fig. 11, element 1126; col. 17, lines 49-60 (in which Desired Page D_P is calculated based on the size of R, page size, desired frequency of free pages, desired percent of free space per page, etc. , and the procedure CLUSTER_RECORD being called with the RID of R and D_P as its parameters); col. 22, lines 41-66 (wherein a user has a position (key value) in a key range of the index or relevant subset of the index 110 is scanned; creating DL 800 structures (indices 802 etc.); Correct the composite RID list according to the composite DL 800.

managing free space associated with the first set of rows in accordance with the first values; and managing free space associated with the second set of rows in accordance with the second values - col. 4, lines 17-31; col. 6, lines 37-62; col. 10, lines 15-63.

However, Iyer et al. do not explicitly disclose wherein the second values differ from the first values by at least one free space management parameter value, thereby producing non-uniform distribution of free space in the database file. Pereira (US 6584474) teaches to provide a comprehensive analysis of at least one database table to determine an information set relating to the health of the tables analyzed...including rows, average free space, percentage free threshold...col. 2, lines 18-41; the DBA sets the PCTFREE variable depending on how the database table is to be used. For example, if a table is to have frequent updates, additional PCTFREE would be established so that enough space is available to allow any necessary row migration to occur within the same block...- col. 4, lines 4-50. Therefore, depends on the on how a table/segment/partition is to be used, the associated free space can be determined/managed accordingly, and thus, free space is distributed non-uniformly within a database file. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Iyer et al's teaching with Pereira's teaching to better allow the free space be distributed to tables/segments/partitions of data based on their usages, thereby, increases database system's performance.

Iyer et al. anticipated claim 19 by the following:

wherein the first set of rows are associated with a first table in the database file and the second set of rows are associated with a second table in the database file – col. 4, lines 5-43; col. 6, lines 7-25.

Iyer et al. anticipated claims 20, 29 by the following:

wherein the first range of key values designate a contiguous range of rows as indicated by the first key value and the second key value – fig. 4, items 400 and 402 (AF); col. 6, lines 53-62.

Iyer et al. anticipated claims 21, 30 by the following:

wherein the second range of key values defines a contiguous range of rows as indicated by the third key value and the fourth key value - fig. 4, items 400 and 402 (GM); col. 6, lines 53-62; col. 4, line 63 to col. 5, line 23.

Iyer et al. anticipated claim 22 by the following:

wherein one or more of the free space management parameters are selected from the group consisting of "free page value", "free pages value", "percent free value", end of key range number of free pages", and "maximum number of rows" – col. 5, lines 24-34; col. 6, lines 26-36; col. 11, lines 8-17; col. 17, lines 49-52; col. 22, lines 41-66.

As per claim 23-24, Iyer et al. do not explicitly disclose wherein the act of assigning first values to each of a plurality of free space management parameters comprises

accepting user input for at least one of the first values, second values. However, Pereira teaches to provide a comprehensive analysis of at least one database table to determine an information set relating to the health of the tables analyzed...including rows, average free space, percentage free threshold...col. 2, lines 18-41; the DBA sets the PCTFREE variable depending on how the database table is to be used. For example, if a table is to have frequent updates, additional PCTFREE would be established so that enough space is available to allow any necessary row migration to occur within the same block...- col. 4, lines 4-50. Therefore, depends on the on how a table/segment/partition is to be used, the associated free space can be determined/managed accordingly by a user, and thus, free space is distributed non-uniformly within a database file. Pereira also teaches a user (database operator, DBA, or other mechanism inquiring as to the condition of a database table) first identifies the tables of which the condition is to be determined – col. 11, lines 63-66. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Iyer et al's teaching with Pereira's teaching to better allow the free space be distributed to tables/segments/partitions of data based on their usages, thereby, increases database system's performance.

Iyer et al. anticipated claim 25-27 by the following:

wherein the first set of rows in a tablespace comprise rows in a data table or an index;

wherein the second set of rows in a tablespace comprise rows in a data table or an

index; and wherein the first sets of rows and the second set of rows comprise rows from a single table – col. 4, lines 5-42; col. 6, lines 6-62.

Iyer et al. anticipated claim 31 by the following:

identify the first range of key values associated with the first set of rows in the database file/table/index comprise instructions to identify rows from a first table – col. 22, lines 38-46.

identify the second range of key values associated with the second set of rows in the database file/table/index comprise instructions to identify rows from a second table – col. 5, lines 19-43; col. 6, lines 47-62.

Iyer et al. anticipated claim 32 by the following:

wherein the first table comprises a data table or an index and the second table comprises a data table or an index – col. 3, line 61 to col. 4, line 31.

Iyer et al. anticipated claims 33, 34 by the following:

wherein the database file is a page set / partition – fig. 1, items 104, 110; col. 3, line 61 to col. 4, line 31.

Claims 35-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iyer et al. (USP 6411964), and further in view of Eberhard et al. (USP 6003022).

As per claims 35, 39, Iyer et al. teach

designating a first set of rows of a file object with a first range of key values – fig. 4, elements 400-404: clustering index; col. 4, lines 5-31; col. 6, lines 6-63; col. 7, lines 11-36; fig. 11, element 1126; col. 12, lines 8-24; col. 17, lines 49-60.

designating a second set of rows of the file object with a second range of key values – col. 6, lines 7-62, especially lines 37-44; col. 7, lines 11-36; fig. 11, element 1126; col. 17, lines 49-60 (in which Desired Page D_P is calculated based on the size of R, page size, desired frequency of free pages, desired percent of free space per page, etc. , and the procedure CLUSTER_RECORD being called with the RID of R and D_P as its parameters); col. 22, lines 41-66 (wherein a user has a position (key value) in a key range of the index or relevant subset of the index 110 is scanned; creating DL 800 structures (indices 802 etc.); Correct the composite RID list according to the composite DL 800.

Iyer et al. does not explicitly disclose non-uniformly distributing free space within the first and second sets of rows of the file object by distributing free space differently for the first range of key values than for the second range of key values. However, Eberhard et al. teach database execution cost and system performance estimator – the abstract. Eberhard et al. teach accepting user input for at least one of the first values – col. 7, lines 35 to col. 8, line 5; fig. 2c, item 222 (table definition in 2c allows user to define/assign pctfree for each table, in this example table STOCK. Users have the ability to assign different pctfree to different tables/partitions. Thus, free space is distributed non-uniformly between tables/partitions of data). Thus, it would have been

obvious to one of ordinary skill in the art at the time of the invention to combine Iyer et al.'s teaching with Eberhard et al.'s teaching in order to allow more flexible utilization of free spaces, which is more appropriately changed to different usage environments.

As per claims 36, 40, Iyer et al. additionally teach wherein the first object is selected from the group consisting of a page set, a table within a database file, and a plurality of tables in a database file - fig. 1, items 104, 110; col. 3, line 61 to col. 4, line 31.

As per claims 37, 41, Iyer et al. additionally teach assigning first values to each of a plurality of free space management parameters associated with the first range of key values for the first set of rows managing free space associated with the first set of rows in according with the second values - fig. 4, items 400 and 402 (AF); col. 6, lines 53-62; col. 5, lines 19-43; col. 6, lines 47-62; col. 22, lines 38-46.

As per claims 38, 42, Iyer et al. additionally teach assigning second values to each of a plurality of free space management parameters associated with the second range of key values for the second set of rows, wherein the second values differ from the first values by at least one free space management parameter value managing free space associated with the second set of rows in accordance with the second values - fig. 4, items 400 and 402 (GM); col. 6, lines 53-62; col. 4, line 63 to col. 5, line 23.

***Response to Arguments***

Applicant's arguments filed 10/4/2005 have been fully considered but they are not persuasive.

Applicants state on page 8 that, "the status of claims 28-30 and 34 is not clear". Examiner states in the document dated 7/5/05, page 7, section 13 that "claims 28-30 and 34, claims the same subject matter as of claims 18-27, 31-33, and are rejected based on the same rejections as of claims 18-27, 31-33." Examiner follows the claims' order, thus, the statement is in the 103-section. However, the statement is clear.

On page 8, last paragraph, Applicants state on page 8, last paragraph and page 9 that Iyer et al. teach "uniformly mange the free space in one file". Examiner finds the statement not persuasive. It is not novel in the art that free space parameters are assigned to tables based on the usage of tables – for example, please see Pereira (USP 6584474), the DBA sets the PCTFREE variable depending on how the database table is to be used. For example, if a table is to have frequent updates, additional PCTFREE would be established so that enough space is available to allow any necessary row migration to occur within the same block...- col. 4, lines 4-50. Therefore, depends on the on how a table/segment/partition is to be used, the associated free space can be determined/managed accordingly, and thus, free space is distributed non-uniformly within a database file.

However, as records have been added, deleted, inserted etc... Iyer et al. teach that the storage structures can degrade. Reorganization removes such structural degradation. Specifically, reorganization distributes free space evenly. This does not

mean that Iyer et al. teach: "uniformly manage the free space in one file". This means that the free space assigned to a set of rows/table/partition etc...would be degraded and the reorganization process will help distribute free space as defined. In addition, Pereira (US 6584474) further improve Iyer et al.'s teaching in allowing users to assign free space to the set or rows/table/partition based on how the set of rows/table to be used - col. 4, lines 4-50.

In response to the Applicants' statement on page 10, claims 35-42 are rejected under U.S.C. 103(a) to Iyer et al. in view of Eberhard et al. Dependent claims 36-38 are not rejected under U.S.C. 102. Iyer et al. additionally teach these limitations.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LINH BLACK whose telephone number is 571-272-4106. The examiner can normally be reached on 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LINH BLACK
Examiner
Art Unit 2163

February 2, 2006

Primary Examiner
Art Unit 2167